| Notice of Allowability | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/814,693 | TATSUNO ET AL. | |
| | Examiner | Art Unit | |
| | Nathan Curs | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment of 23 August 2006*.

2. ☒ The allowed claim(s) is/are *1-3,5-8,10-14 and 16-24*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20060912
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with D. Stanger on 7 and 13 September 2006.

The respective claims of 23 August 2006 indicated below have been amended as follows:

1. (Currently amended) Optical-fiber communication equipment, comprising:

a laser light source,

a means for changing light of the laser light source to a parallel plane wave to form a parallel light path,

an etalon having two or more transmission bands and having a free spectral range matched with a channel grid interval of wavelength division multiplexing optical-fiber communication, ~~determined by ITU recommendation,~~ and

first and second light ~~detectors~~ detecting means, wherein:

said etalon is located in the parallel light path;

a wavelength of the laser light source is enabled to be changed so that said wavelength is fixed to a desired value of the channel grid interval of wavelength division multiplexing optical-fiber communication;

the parallel plane wave is divided into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium ~~having~~ and that has optical characteristics different from those of the light that is transmitted through said etalon;

the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light;

signals based on photocurrents from the first and second light ~~detectors~~ detecting means are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to a desired value; and

said signal is used for controlling a wavelength of the laser light source,

wherein said laser source and said etalon are located on the same Peltier cooler so that a temperature of said laser is changed in accordance with a temperature of said etalon, and

a thickness of said etalon is greater than that of an etalon whose free spectral range is matched with a channel grid interval of wavelength division multiplexing optical-fiber communication ~~determined by ITU recommendation~~ without consideration of temperature dependence, ~~so that the~~ so that a shifted quantity of said etalon caused ~~by the~~ by a temperature of said etalon becomes equal to a difference of a narrowed free spectral range and the channel grid interval, so as to bring the free spectral range of the etalon into match with the channel grid interval.

4. (Canceled)

6. (Currently amended) Optical-fiber communication equipment, comprising:

a laser light source,

a means for changing light of the laser light source to a parallel plane wave to form a parallel light path,

an optical system for dividing the parallel plane wave,

an etalon, and

first and second light ~~detectors~~ detecting means, wherein:

said etalon is located in the parallel light path;

said etalon has a plurality of light transmission portions having desired wavelengths existing at given wavelength intervals;

any one of the plurality of light transmission portions corresponds to an emitting wavelength desired for the laser light source;

said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium ~~having~~ and that has optical characteristics different from those of the light that is transmitted through said etalon;

the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light;

signals from the first and second light ~~detectors~~ detecting means are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to a desired value; and

said signal is used for controlling a wavelength of the laser light source so that the wavelength is kept to be a given wavelength,

wherein said laser source and said etalon are located on the same Peltier cooler so that a temperature of said laser is changed in accordance with a temperature of said etalon, and

a thickness of said etalon is greater than that of an etalon whose free spectral range is matched with a channel grid interval of wavelength division multiplexing optical-fiber communication ~~determined by ITU recommendation~~ without consideration of temperature dependence, ~~so that the~~ so that a shifted quantity of said etalon caused by a temperature of said etalon becomes equal to a difference of a narrowed free spectral range and the channel grid interval, so as to bring the free spectral range into match with the channel grid interval.

9. (Canceled)

12. (Currently amended) Optical-fiber communication equipment, comprising:

a laser light source,

a means for changing light of the laser light source to a parallel plane wave to form a parallel light path,

an optical system for dividing the parallel plane wave,

an etalon, and

first and second light ~~detectors~~ detecting means, wherein:

said etalon is located in the parallel light path;

said laser light source is capable of lasing at a plurality of lasing wavelengths;

said etalon has a plurality of light transmission portions having desired wavelengths existing at given wavelength intervals;

the wavelength interval of the light transmission portions is equivalent to a channel grid interval of wavelength division multiplexing optical-fiber communication;

any one of said plurality of lasing wavelengths of the laser light source is equivalent to an emitting wavelength corresponding to a desired wavelength that is shifted to a wavelength

portion having a highest transmittance among said plurality of light transmission portions provided by the etalon;

said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium ~~having~~ and that has optical characteristics different from those of the light that is transmitted through said etalon;

signals based on photocurrents from the first and the second light ~~detector~~ detecting means, which receive each of said divided pieces of light, are compared to each other to obtain a signal for setting an emitting wavelength of the laser light source to a desired value; and

said signal is used for controlling each of said plurality of lasing wavelengths provided by the laser light source so that each lasing wavelength is kept to be a given wavelength,

wherein said laser source and said etalon are located on the same Peltier cooler so that a temperature of said laser is changed in accordance with a temperature of said etalon, and

a thickness of said etalon is greater than that of an etalon whose free spectral range is matched with a channel grid interval of wavelength division multiplexing optical-fiber communication ~~determined by ITU recommendation~~ without consideration of temperature dependence, ~~so that the~~ so that a shifted quantity of said etalon caused by a temperature of said etalon becomes equal to a difference of a narrowed free spectral range and the channel grid interval, so as to bring the free spectral range of the etalon into match with the channel grid interval.

15. (Canceled)

18. (Currently amended) Optical-fiber communication equipment, comprising:

a laser light source,

a means for changing light of the laser light source to a parallel plane wave to form a parallel light path,

an etalon having two or more transmission bands, and

first and second light ~~detectors~~ detecting means, wherein:

said etalon is located in the parallel light path;

the parallel plane wave is divided into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium ~~having~~ and that has optical characteristics different from those of the light that is transmitted through said etalon;

the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light;

signals based on photocurrents from the first and second light ~~detectors~~ detecting means are compared to each other to obtain a signal representing the free spectral range of the etalon;

said signal representing the free spectral range of the etalon is compared to a wavelength ~~standard~~ channel grid of plural ~~standard~~ wavelengths; and

said signal representing the free spectral range is used for controlling a wavelength of the laser light source to match one of the plural ~~standard~~ wavelengths of the wavelength ~~standard~~ channel grid,

wherein said laser source and said etalon are located on the same Peltier cooler so that a temperature of said laser is changed in accordance with a temperature of said etalon, and

a thickness of said etalon is greater than that of an etalon whose free spectral range is matched with a channel grid interval of wavelength division multiplexing optical-fiber communication ~~determined by ITU recommendation~~ without consideration of temperature

dependence, ~~so that the~~ so that a shifted quantity of said etalon caused by a temperature of said etalon becomes equal to a difference of a narrowed free spectral range and the channel grid interval, so as to bring the free spectral range of the etalon into match with the channel grid interval.

19. (Previously presented) Opticai-fiber communication equipment according to Claim 18, wherein:

said optical-fiber communication equipment comprises an information storing portion, and said laser light source comprises a temperature detecting means;

the information storing portion stores temperature characteristics of a light transmission portion of the etalon; and

according to a signal from the temperature detecting means and said stored temperature characteristics of the light transmission portion of the etalon, a shift of an emitting wavelength of the laser light source from the wavelength matched to said one of the plural ~~standard~~ wavelengths is compensated.

21. (Currently amended) Optical-fiber communication equipment, comprising:

a laser light source,

a means for changing light of the laser light source to a parallel plane wave to form a parallel light path,

an optical system for dividing the parallel plane wave, an etalon, and

first and second light-~~detectors~~ detecting means, wherein:

said etalon is located in the parallel light path;

said etalon has a plurality of light transmission portions having desired wavelengths existing at given wavelength intervals;

any one of the plurality of light transmission portions corresponds to an emitting wavelength desired for the laser light source;

said optical system for dividing the parallel plane wave divides the parallel plane wave into at least two pieces of light including light that is transmitted through said etalon and light passing through a medium ~~having~~ and that has optical characteristics different from those of the light that is transmitted through said etalon;

the first light detecting means detects one divided piece of light and the second light detecting means detects the other divided piece of light;

signals from the first and second light ~~detectors~~ detecting means are compared to each other to obtain a signal representing the free spectral range of the etalon;

said signal representing the free spectral range of the etalon is compared to a wavelength ~~standard~~ channel grid of plural ~~standard~~ wavelengths; and

said signal representing the free spectral range is used for controlling a wavelength of the laser light source to match one of the plural ~~standard~~ wavelengths of the wavelength ~~standard~~ channel grid so that the wavelength is kept to be the matched wavelength,

wherein said laser source and said etalon are located on the same Peltier cooler so that a temperature of said laser is changed in accordance with a temperature of said etalon, and

a thickness of said etalon is greater than that of an etalon whose free spectral range is matched with a channel grid interval of wavelength division multiplexing optical-fiber communication ~~determined by ITU recommendation~~ without consideration of temperature dependence, ~~so that the~~ so that a shifted quantity of said etalon caused by a temperature of said etalon becomes equal to a difference of a narrowed free spectral range and the channel

grid interval, so as to bring the free spectral range of the etalon into match with the channel grid interval.

22. (Previously presented) Optical-fiber communication equipment according to Claim 21, wherein:

said optical-fiber communication equipment comprises an information storing portion, and said laser light source comprises a temperature detecting means;

the information storing portion stores temperature characteristics of a light transmission portion of the etalon; and

according to a signal from the temperature detecting means and said stored temperature characteristics of the light transmission portion of the etalon, a shift of an emitting wavelength of the laser light source from the wavelength matched to said one of the plural ~~standard~~ wavelengths is compensated.

25-26. (Canceled)

***Conclusion***

2. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of

a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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